



Energy Conservation Through Duct Leakage Reduction

February 26, 2004

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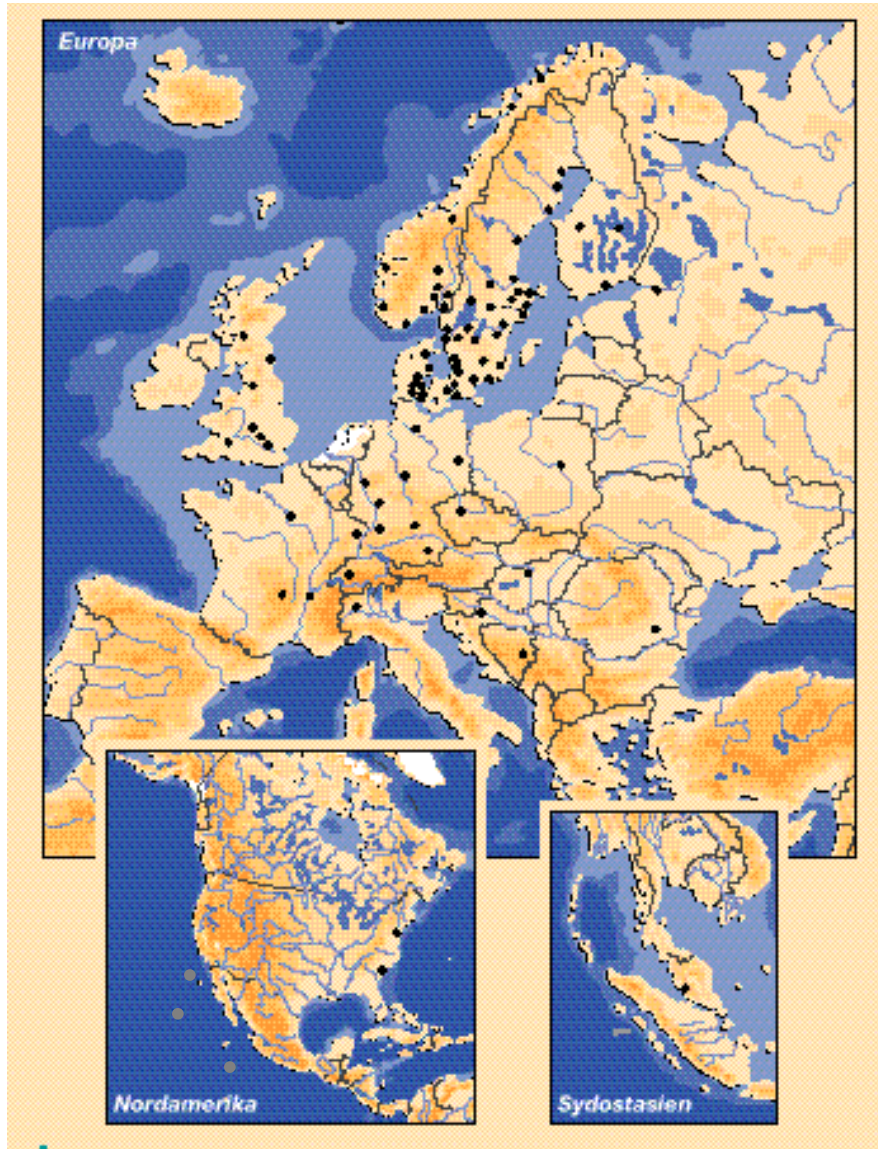
Agenda

- Lindab worldwide
- Lindab USA
- Product lines
- Operating cost and energy savings
- Installed cost labor savings
- Additional cost reduction opportunities
- CADvent[®] duct design and drafting software



Lindab Worldwide

- World's largest duct manufacturer
- As of 2000, largest duct manufacturer in US
- 2003 sales \$700 million
- Solidly profitable
- Over 3,500 employees
- Operations in 25 countries

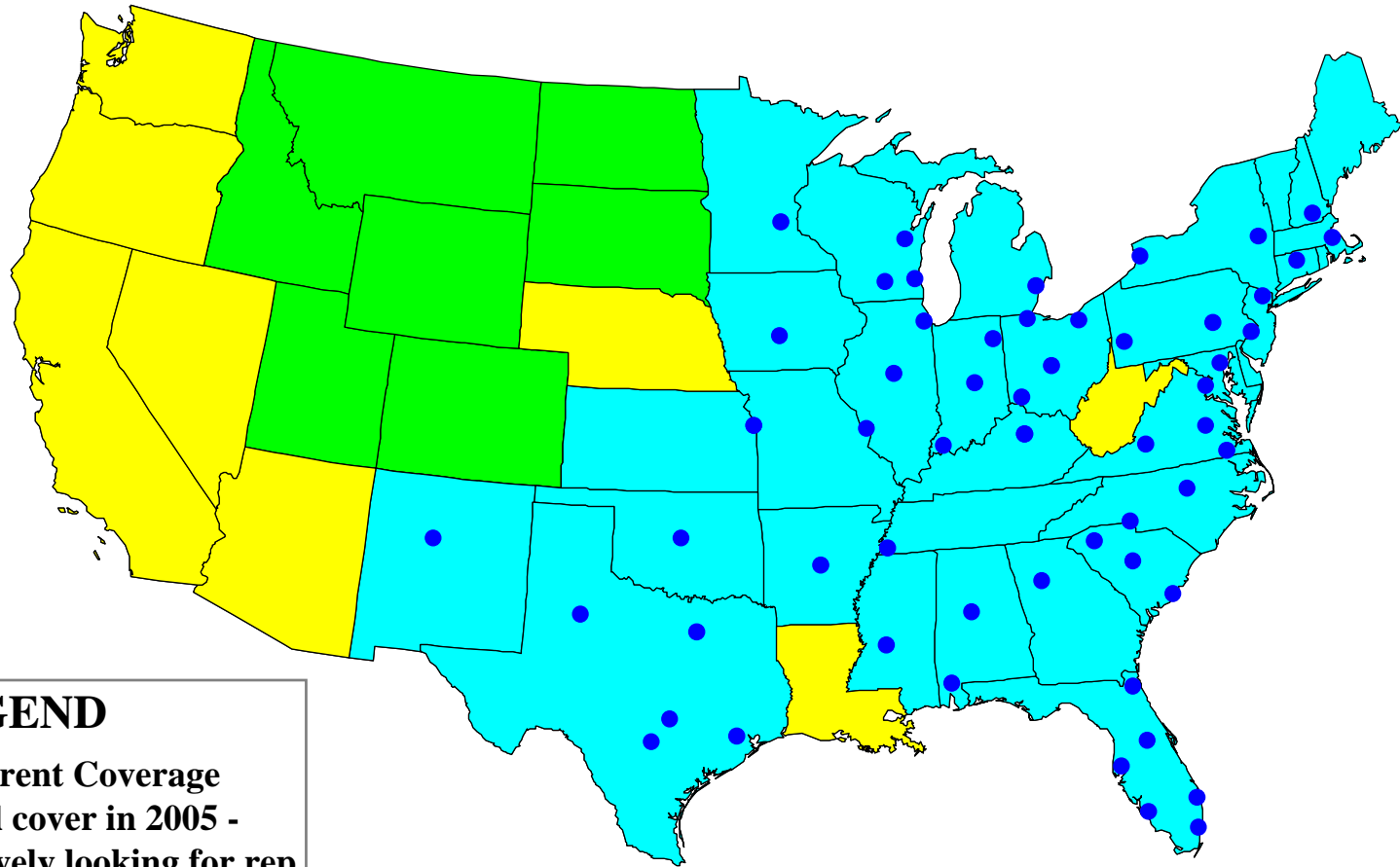






Lindab USA

- Started in US in 1993
- 280,000 sq ft of manufacturing and warehousing
 - Headquartered in Stamford, CT
 - 120,000 sq ft in Portsmouth, VA
 - 70,000 sq ft in Tampa, FL
 - 50,000 sq ft in Skokie, IL
 - 40,000 sq ft in Memphis, TN
 - Sales office in Cincinnati & Dallas
- West coast operations - 2005
- \$2 million inventory
- 15 Truckloads/150 orders per day

Current Distribution

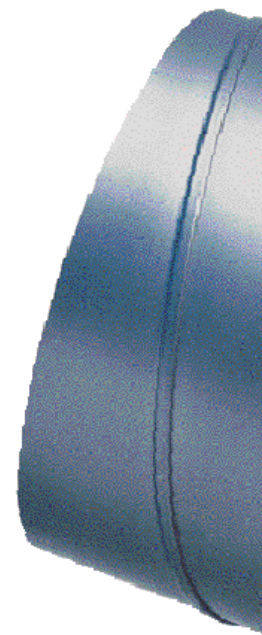


LEGEND

-  Current Coverage
-  Will cover in 2005 - actively looking for rep
-  Will cover in 2004
-  Distributor location



SPIROsafe[®]
and
other Lindab product
lines



Lindab product lines

- SPIROsafe Single Wall
 - Leakage Class 3 performance guaranteed (–20” WG to +12” WG)
 - Galvanized G90 standard on pipe and fittings
 - 3” Dia to 60” Dia @ +/- 0.25% tolerance
 - Unique design features – rolled edges, flat dimpled seams, double lipped gaskets, etc
 - Also available in SS 304 & 316
 - Easy to paint in the field



Lindab product lines

- SPIROsafe Double Wall
 - DW that installs like SW - easiest installing DW system on the market
 - Eliminates the need for costly flanged connections
 - SMACNA Leakage class 3 performance and guarantee
 - Slip fit without aligning inner liners
 - Fiber retention system
 - Available in 1" and 2" wall thickness



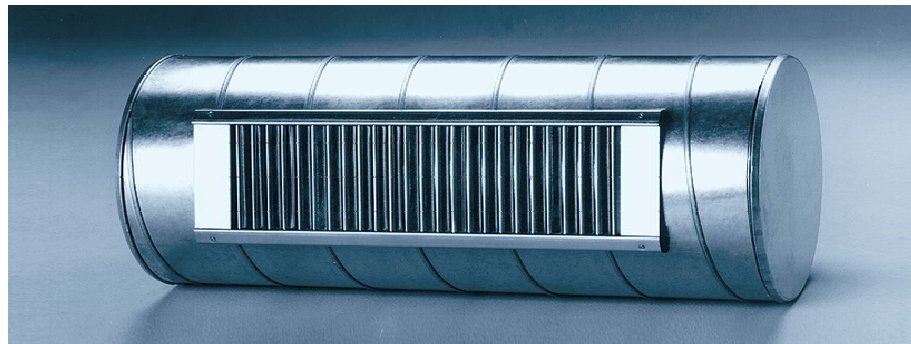


Lindab product lines

- SPIROoval
 - Available in single wall and double wall
 - New flanging system called SPIROflange
 - Lower cost alternative to industry accepted methods
 - Only one weld for better strength and easier sealing
 - Side inserted drive cleat for tight-to-slab installations

Lindab product lines

- SPIROcomfort RGS-3
 - Register for supply or return air
 - Mounts directly to round duct without rectangular tap
 - For single wall or double wall spiral duct
 - Single blade type adjustable volume damper
 - Double deflection adjustable blades
 - Flanges and end caps provide flush fit



Lindab product lines

- SPIROcomfort DRLA
 - High air volume drum louver
 - Mounts directly to round duct
 - Adjustable mounting flanges
 - Rotating “drum”
 - Individually adjustable vanes
 - Extractor damper operable from face



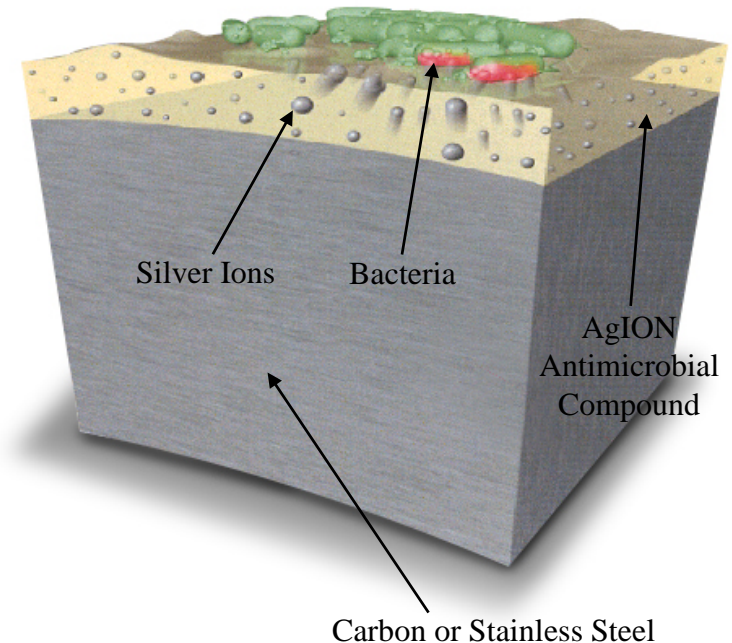
Lindab product lines

- SPIROsilencer
 - Straight silencers with or without baffle
 - Elbow silencers
 - Fiber retention fabric
 - Equipped with SPIROsafe gaskets
 - 2", 4", 6" wall thickness
 - 1'-8' lengths



Lindab product lines

- SPIRO® + AgION™ antimicrobial coating
 - How does AgION work?
 - Silver ions are encapsulated in a ceramic called zeolite
 - The zeolite acts as an ion pump to exchange silver ions with other ions (Na⁺, Ca⁺, etc.) present in moisture
 - This mechanism provides a controlled time release of silver ions
 - The released silver ions inhibit growth of bacteria
 - All products available with AgION coating



Operating cost savings on a typical system

| Duct System Type | Leakage Class | Air Volume (CFM) | Annual Operating Cost per System | Additional Annual Operating Cost | Lindab Savings |
|---------------------|---------------|------------------|----------------------------------|----------------------------------|----------------|
| No Leakage | 0 | 10,000 | \$5,595 | N/A | N/A |
| SPIROsafe® | 1.5 | 10,165 | \$5,876 | \$281 | 0% |
| Conventional Spiral | 6 | 10,659 | \$6,776 | \$1,181 | 15% |
| Rectangular | 12 | 11,318 | \$8,112 | \$2,517 | 38% |

– SPIROsafe vs. rectangular duct

- $\$2,517 - \$281 = \$2,236$ savings per system per year
- $\$2,236/\text{system} \times 4 \text{ systems} = \$8,944$ per location per year utility savings
- $\$8,944 / \text{location} \times 50 \text{ locations} = \$447,200$ total annual utility savings

Installed Cost Comparison

- Labor 70% - Material 30%

| | <u>Conventional</u> | <u>SPIROsafe</u> |
|---------------------------------------|---------------------|--|
| LABOR | | |
| SPIROsafe = Labor savings (20% - 30%) | 70% | $\begin{array}{r} 70\% \\ \times 0.70 \\ \hline 49\% \end{array} \longrightarrow 49\%$ |
| MATERIAL | | |
| Duct | 15% | $\longrightarrow 15\%$ |
| Fittings | 15% | $\begin{array}{r} 15\% \\ \times 1.14 \\ \hline 17\% \end{array} \longrightarrow 17\%$ |
| TOTAL COST | 100% | 81% |

Installed Cost Comparison

- Labor 60% - Material 40%

| | <u>Conventional</u> | <u>SPIROsafe</u> |
|---------------------------------------|---------------------|--|
| LABOR | | |
| SPIROsafe = Labor savings (20% - 30%) | 60% | $\begin{array}{l} 60\% \\ \times 0.75 \\ \hline 45\% \end{array} \longrightarrow 45\%$ |
| MATERIAL | | |
| Duct | 20% | $\longrightarrow 20\%$ |
| Fittings | 20% | $\begin{array}{l} 20\% \\ \times 1.14 \\ \hline 23\% \end{array} \longrightarrow 23\%$ |
| SPIROsafe = SPIROvent + (10% - 14%) | | |
| TOTAL COST | 100% | 88% |

Installed Cost Comparison

- Labor 50% - Material 50%

| | <u>Conventional</u> | <u>SPIROsafe</u> |
|---------------------------------------|---------------------|--|
| LABOR | | |
| SPIROsafe = Labor savings (20% - 30%) | 50% | $\begin{array}{l} 50\% \\ \times 0.80 \\ \hline 40\% \end{array} \longrightarrow 40\%$ |
| MATERIAL | | |
| Duct | 25% | 25% |
| Fittings | 25% | $\begin{array}{l} 25\% \\ \times 1.14 \\ \hline 28\% \end{array} \longrightarrow 28\%$ |
| SPIROsafe = SPIROvent + (10% - 14%) | | |
| TOTAL COST | 100% | 93% |



Additional cost reduction opportunities

- System designed knowing leakage class allows for:
 - Air handling equipment downsizing opportunity
 - Ductwork downsizing opportunity
- Achieve design performance regardless of installing contractor
- Standard lead times – 8 working days
 - Easier to stay on project schedule
- Consistent product quality across the U.S.
- Total system performance – 10 year guarantee

